U.S. DEPARTMENT OF ENERGY

Lessons Learned

Oak Ridge

Presenter: Sue Cange

EM ARRA BEST PRACTICES and LESSONS LEARNED WORKSHOP

Waste Management Symposium
Phoenix, AZ

March 1, 2012

Oak Ridge

Project: Multiple ARRA Projects

Overview of Best Practice or Opportunity

Working closely together, the Y-12 Site M&O Contractor, the ORO Reservation disposal cell, DOE-EM, and the Regulators crafted a technically defensible, yet very cost effective characterization program in an effort to rapidly D&D two buildings that were part of the Y-12 ARRA scope. This characterization program should serve DOE-EM well as a new characterization model for disposal of extremely low-level, low risk facilities in the on-reservation disposal cell.

Benefit (actual or anticipated)

The building characterization approach was going to be a statistically based sampling campaign to cover both structures. After close consultation with and the recommendation of the disposal cell WAC Attainment Team, the approach was replaced with a biased sampling approach. The biased approach basically allows characterization of the most contaminated areas and is used as an upper limit for the overall contamination of the entire structure. This greatly reduces the number of samples required as well as the effort to obtain the samples. The new approach offered a major characterization cost savings and satisfied WAC requirements for disposal. This approach was so successful it has already been transferred to other projects at Y-12 as well as ORNL.

Oak Ridge

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

Site Contact(s)

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Oak Ridge

Project: Y-12 National Security Complex (B&W Y-12)

Overview of Best Practice or Opportunity

Contractor management negotiated with the Atomic Labor Trades Council (ATLC) to permit the hiring of temporary workers for use only in the execution of ARRA scope. Approximately 125 temporary workers were hired, cleared, and trained expeditiously to supplement a small work force of permanent ATLC workers. Temporary workers were provided site benefits (medical, sick leave, vacation, etc.) with the exception of retirement and union seniority.

Benefit (actual or anticipated)

By using temporary workers, ARRA scope was performed without creating a "benefits mortgage" or DOE requirements for layoffs. As work progressed and permanent openings were created through attrition, jobs were posted and permanent job offers were made to the high performing, temporary workers with a requirement that they remain on ARRA scope until the work was completed (no transfers to new positions until ARRA complete). Since the temporary workers were cleared and trained, permanent positions were filled without the normal "wait time" associated with hiring externally. To date, over 110 permanent jobs offers were made to temporary ARRA workers.

Oak Ridge

Can this practice be implemented on your base EM scope without HQ action or support? *No*

There is currently no base EM scope at Y-12 but negotiation for continued use of temporary workers while performing deactivation work could save significant money. No EM HQ action is required

Site Contact(s)

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Oak Ridge

Project: Building K-33 D&D

Overview of Best Practice or Opportunity

Utilizing Firm Fixed Price (FFP) Contracts

Project Planning

- DOE developed a well defined scope of work
- DOE utilized the established Indefinite delivery/indefinite quantity (IDIQ) contract mechanism to award to the best value bidder

. **Work Execution**

- LSRS worked in conjunction with DOE ORO and DOE Headquarters to define project controls and reporting systems appropriate to:
  - DOE reporting requirements
  - Effective schedule and budget management
- LSRS and DOE agreed upon cost variance disclosure under FFP reporting to identify cost trends and require corrective cost recovery actions.
- Added FAR 52.232-32 Performance Based Payments, and definitized the payment metrics based on negotiated and agreed-upon performance milestones to the LSRS Contract
- Deleted FAR 52.234-4 Earned Value Management System including the reference to ANSI/EIA Std.-748; from the LSRS FFP Contract

Oak Ridge

- Other contract terms were revised to incorporate FFP financial reporting requirements.
- Removed I-8 FAR 52.232-16 Progress Payments from the LSRS Contract

Benefit (actual or anticipated)

- ***Lessons Learned*** **–** DOE's well defined scope of work limited requests for equitable adjustment (REA) and change orders to unforeseeable changes in field conditions. (less than 2.53% of total contract value)
- ***Lessons Learned*** - EVMS reporting is different for FFP and therefore future FFP contracts should be written based upon performance based rather than progress metrics.

Can this practice be implemented on your base EM scope without HQ action or support? *No*

HQ will need to support the use of FFP contracts throughout the DOE Complex.

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Savannah River

Presenter: John Lopez

EM ARRA BEST PRACTICES and LESSONS LEARNED WORKSHOP

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Savannah River

Project: All Capital Asset Projects

Overview of Best Practice or Opportunity

Project Planning
Work Execution

The “core team approach” is a critical aspect of cleanup planning that should extend through project execution and to closeout. The core team approach is a formalized, consensus-based process in which a team of representatives from the Department and the regulatory agencies are empowered with decision-making authority and work together to reach agreement on key remediation decisions. Remedial project managers from the DOE, U.S. Environmental Protection Agency (USEPA), and South Carolina Department of Health and Environmental Control (SCDHEC) comprise the core team. For cleanup decisions, the core team is supported by Savannah River Nuclear Solutions, LLC (SRNS) as the Department’s management and operating contractor of the site. Equally important, the core team works to ensure that all technical support staff and stakeholders are involved and communicating effectively throughout the decision-making process. A critical aspect of the core team is the frequent and open communication among its members, the free-flow of information for which decisions are based, and the uninhibited nature of the discussions that are conducted as issues are addressed, problems solved and decisions made. The core team approach should continue through project execution and closeout.

Savannah River

Benefit (actual or anticipated)

At front-end planning, the core team approach allowed for a streamlined and expedited decision-making and remedy selection process. Numerous ARRA-funded cleanup efforts were executed as non-time critical removal actions instead of remedial actions under *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA). Action Memoranda were issued and accelerated cleanup was allowed to begin. During the cleanup action (project execution), the core team approach was also implemented. All representatives conducted jobsite surveillances during the course of cleanup, and were provided first-hand witness to the progression of work. SCDHEC even had an onsite presence by assigning staff to observe and oversee field operations. When unexpected field conditions were discovered, the regulatory agencies worked with DOE and SRNS in "real-time" to develop and agree on corrective actions and paths forward.

The core team approach also expedited regulatory acceptance at the completion of the cleanup actions, which in turn facilitated early project completions. Final walk-down inspections were conducted and all resulting punch-list items were addressed and closed.

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

Savannah River

Project: All Capital Asset Projects

Overview of Best Practice or Opportunity

Project Planning
Work Execution
The key performance parameter(s) (KPP) of capital asset cleanup projects should be explicitly aligned with the remedial action of objective(s) (RAO) and/or the technical (physical) end state of the unit being remediated or facility being dispositioned as provided in the governing regulatory decision document(s). The alignment between regulatory requirements and project requirements will provide a more precise and accurate statement of expected outcome(s) and basis for completion success.

Benefit (actual or anticipated)

The alignment between regulatory requirements (RAOs) and project requirements (KPPs) will provide a more precise and accurate statement of expected outcome(s) and basis for completion success.

Savannah River

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

Project: All Capital Asset Projects

Overview of Best Practice or Opportunity

Project Planning
Work Execution

The total project cost (TPC) and the cost baseline of a capital asset project should not include contributions made to retiree pension and post-retirement benefits, including retiree medical, dental and non-contributory group life insurance. Because the amount of pension/post-retirement benefits contribution is part of the contractor's general and administration costs, it is included in the budgeted cost of work scheduled and becomes part of the contractor performance measurement baseline. The impact on TPC is exasperated by the *Pension Protection Act of 2006*, as amended by the *Worker, Retiree, and Employer Act of 2008*, which mandated a larger contribution be made. When adverse market conditions drive increases in these "legacy" costs, the amount of planned pension contribution and actual pension payments affects the project's earned value measurements, including its budget at completion and its estimate at completion. The contribution to pension/post-retirement benefits should be excluded from TPC for the following reasons:

- Pension is a cost that provides no direct benefit to the technical execution, performance, or outcome of the project.

Savannah River

- Pension artificially increases TPC, which results in no meaningful representation of the cost for executing the work.
- At a government-owned, contractor-operated site such as SRS, the allocation of the pension contribution is equally distributed across all major contractor work elements and multiple projects based on the total site-wide/contract funding target. This allocation can change based on market conditions and the total value of actual work executed. This has historically caused cost fluctuations that are not reflective of TPC or earned value performance of a project.
- Because of this allocation and the changes in total funding targets from year to year, the amount of pension contribution and payments burdened by a particular project can vary thus casing artificial variances and unnecessary project reporting.
- Based on economic and market conditions, pension contribution may increase for at-risk pension plans, thus artificially increasing the true cost of executing a project.
- Pension may artificially cause a project to exceed various administrative cost thresholds in DOE O 413.3B.

The contribution to pension/post-retirement benefits is more appropriately captured as a program cost and program risk.

Savannah River

Benefit (actual or anticipated)

Excluding the contributions made to pension/post-retirement benefits from a project's cost will (1) provide a more accurate representation of the true acquisition cost of the capital investment and (2) allow for a more representative of cost performance during execution.

Can this practice be implemented on your base EM scope without HQ action or support? *No*

The exclusion of the amount of contributions made to pension/post-retirement benefits from TPC requires a change in Departmental policy. Contractor organizations will be required to revise their financial disclosure statements at the written direction of the Department's Chief Financial Officer.

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Energy Technology Engineering Center

Presenter: John Jones

EM ARRA BEST PRACTICES and LESSONS LEARNED WORKSHOP

Waste Management Symposium
Phoenix, AZ

March 1, 2012

Energy Technology Engineering Center

Overview of Best Practice or Opportunity

Interactively involving stakeholders and regulators throughout the decision making process has significantly reduced regulator review times and stakeholder questions. At each step in the characterization process meetings are scheduled with regulators to discuss each sampling location, the rationale and data quality objective for each sampling location, and to review the sample density. A detailed site-wide Geographic Information System (GIS) with all previous characterization, infrastructure, and historic information has been established and has been used extensively to aid in making sampling decisions. The EPA has added to the information data base by preparing GIS layers that document the results of their gamma scanning, aerial photo review, geophysical sampling, and sampling results. In addition, as DOE and the state regulator conduct chemical sampling, that information coupled with the thousands of previous sampling results has led to efficient review and decision making, as both DOE and state regulators work as a team in real time to address a path forward.

Benefit (actual or anticipated)

Past practices resulted in lengthy review times with the regulator and extreme distrust by stakeholders of any DOE activity. This review time has been cut to less than 10 days, instead

Energy Technology Engineering Center

of months for each document. DOE and EPA as the primary Recovery Act recipient implemented early and often involvement by stakeholders establishing technical exchanges frequently and often thus prompting more of a collaborative process. As DOE has continued chemical sampling in combination with EPA and now independently, DOE has implemented a very interactive process with real time review and comment with the state regulator thus eliminating long review times. There were times in the past when the state regulator took over two years to review documents and provide comments. In addition, EPA and DOE have had joint meetings with stakeholders receiving their input in real time eliminating long comment periods and many questions. A key component of these joint meetings was incorporating stakeholder suggestions in real time at the meetings. The use of this detailed GIS has resulted in the ability for not only regulators but also stakeholders to easily and quickly understand and comment on on-going characterization work.

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

DOE in collaboration with the state regulator has already implemented this process within the base program.

Energy Technology Engineering Center

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

SLAC National Accelerator

Presenter: Kevin Bazzell

EM ARRA BEST PRACTICES and LESSONS LEARNED WORKSHOP

Waste Management Symposium
Phoenix, AZ

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SLAC National Accelerator Laboratory

Project: Environmental Remediation Project

Overview of Best Practice or Opportunity

Establish a Contract and Baseline correlation of planned removal actions/field activities before they commence. This correlation should be an agreement between contracting officers, field oversight personnel and implementing contractors on how the contract and baseline will be modified if field condition changes occur to minimize the amount of mobilized field crew downtime. This could minimize required contract and baseline changes.

Benefit (actual or anticipated)

Contracts may contain small removal actions which may not require lengthy mobilized crew times. Additionally, it may not be cost effective to move work crews from one site to another when changed conditions occur. An upfront contract/baseline change agreement will help minimize the downtime of mobilized crews when work conditions change. Depending on how the contract is written, an REA may be warranted to request a contract value change as well as provide the basis for a baseline change.

SLAC National Accelerator Laboratory

<u>Can this practice be implemented on your base EM scope without HQ action or support?</u> *Yes*

Depends upon the contract.

SLAC National Accelerator Laboratory

Project: Environmental Remediation Project

Overview of Best Practice or Opportunity

Ensure removal action sites are well characterized laterally as well as vertically prior to commencing field crew mobilization. If an initial removal action doesn't result in clean confirmation samples, then decisions have to be made regarding keeping the contractor mobilized while further characterization is performed.

Benefit (actual or anticipated)

Ensuring removal action sites are well characterized prior to field crew mobilization will minimize unnecessary field crew down times and/or the need for extra demobilization/ mobilization activities. Additionally, associated REAs and baseline change requests should no longer be needed.

Can this practice be implemented on your base EM scope without HQ action or support? Yes

Depends upon the contract.

SLAC National Accelerator Laboratory

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

West Valley

Presenter: Craig Rieman

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West Valley Demonstration Project

Overview of Best Practice or Opportunity

Work Execution

Union members should be included in initial classroom training for new ARRA employees. These mentors can answer questions the trainees have and assimilate the new hires to the site.

Benefit (actual or anticipated)

These mentors help transition the ARRA employees to the sites safety culture and accelerate the on-the-job training process, allowing the ARRA workers to begin field work earlier.

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

West Valley Demonstration Project

Overview of Best Practice or Opportunity

Work Execution

Use of a cross-functional team to screen candidates and perform job candidate structured interviews was more effective than using traditional screening and hiring processes.

Benefit (actual or anticipated)

Use of the structured behavioral based system of interviewing resulted in a better selection and placement of hires. Structured interviews increased the reliability, validity, and usefulness of the interview process.

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Idaho National Laboratory

Presenters: Ken Whitham / Erin Bognar

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Idaho National Laboratory

Overview of Best Practice or Opportunity

Project Planning
Engagement of site stakeholders early in work scope identification, work scope prioritization, and work planning processes

Benefit (actual or anticipated)

- Regulators understood and supported work scope prior to regulatory document submittals.
- Regulators had ownership in scope by the time the engineering evaluations and corrective actions plans or closure documents were submitted for approval.
- Expedited approval cycles from months to weeks.

Can this practice be implemented on your base EM scope without HQ action or support? Yes

Site Contact(s)

Kenneth R.Whitman, DOE-ID

Idaho National Laboratory

Overview of Best Practice or Opportunity

Work Execution
Implement Block Training blend of classroom and “hands-on”.
Integration of new workers into existing crews.

Benefit (actual or anticipated)

- Cost-effective and provides hands-on training.
- Provides mentorship of proven worker safety and health programs.
- Peers demonstrate ownership of the proven worker safety and health program.
- Re-enforces culture of Voluntary Protection Program, Enivronmental Management System ISO 14001, and Integrated Safety Management, Contractor Assurance and Quality Assurance Systems.

Can this practice be implemented on your base EM scope without HQ action or support? Yes

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Portsmouth

Presenter: Joel Bradburne

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Portsmouth

Projects: X-533 Switchyard D&D; X-633 Cooling Tower Complex D&D

Overview of Best Practice or Opportunity

Work Execution
Project Mobilization before Regulatory Document Approval
ARRA's required rapid response necessitated the development of CERCLA related regulatory documents including: Engineering Analysis/Cost Alternative, Remedial Action Work Plans and Action Memorandums for submittal and approval by DOE and Ohio EPA prior to significant D&D actions occurring. The site remediation contractor mobilized personnel at risk to begin required personnel training and pre-D&D activities in anticipation of accelerated approval. The contractor was focused on achieving schedule performance and anticipated performing significant pre-D&D activities.

Extensive revisions of these first significant CERLA related documents caused a delay in final approvals from Ohio EPA.

Lesson Learned

Complete decision documents before major mobilization. The regulatory process must be tightly integrated with work performance strategy to minimize inefficiencies. Recommendation

is that major mobilization including heavy equipment rental, and workforce staffing be synchronized with approval of required regulatory documents.

PORTS implemented a Regulatory Integrated Project Team (IPT) focused on driving completion and integration of all required regulatory documents under the Site's current regulatory framework.

Benefit (actual or anticipated)

Improved cost performance and productivity is achievable if the timing of mobilization is more tightly aligned with approval of regulatory documents. Risk of schedule delay must be carefully weighed against potential cost savings when initiating CERCLA regulatory document driven remedial action activities.

The Regulatory IPT provides a "real-time" focused environment with all stakeholders to ensure all multi-stakeholder input and reviews are coordinated and integrated to ensure timely approval of regulatory documents.

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

This approach has been adopted and implemented for the PORTS D&D project.

Portsmouth

Project: X-533 Switchyard D&D

Overview of Best Practice or Opportunity

Work Execution

Critical Lift Planning must evaluate soil conditions for lift locations/travel paths.

A component of the X-533 Switchyard D&D project entailed the removal of ten synchronous condensers that ranged in weight from 170 to 270 tons from a height of ~60 feet on top of the switch house buildings. Utility isolation activity had disturbed soil in the area that the contractor originally planned to use for lift pad locations. The weights involved indicated the use of a large 600 ton traveling crane. Delays and additional equipment rental costs were incurred when the contractor discovered that the planned lift locations would require significant and expensive soils improvement work to support the crane and load and necessitated a complete re-planning of the lift locations and sequence.

Lesson Learned

Consider implications of soil conditions of lift locations and required crane travel paths when planning critical lifts. Perform required soil compaction testing early in the planning process to ensure planned locations and travel paths will support required ground pressures associated

with heavy crane placement and movement. Mobilization of heavy cranes should be delayed until all attributes of crane placement and travel movements have been thoroughly evaluated with dynamic cone penetrometer testing, soil borings and technical concurrence gained is from crane vendor's engineering group.

Benefit (actual or anticipated)

Improved cost performance and productivity is achievable if the timing of mobilization is more tightly aligned with ground bearing pressure engineering analysis of all crane placement locations and travel paths anticipated in the critical lift plan.

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

This approach has been adopted and implemented for the PORTS D&D Project.

Portsmouth

Project: Waste Disposal Project: Uranium Material Center – Disposition of Legacy Uranium

Overview of Best Practice or Opportunity

Work Execution

Nuclear Material Packaging/Transportation - Utilize new containers and trailers to eliminate historical contamination issues.

During execution of PORTS' disposition of uranium materials over 1750 metric tons of uranium were packaged and shipped for disposal to the Nevada Nuclear Security Site (NNSS). Radioactive contamination exceeding the free release limit was discovered on several trailers used to ship waste to NNSS. Subsequent radiological surveys of truck cabs, drivers, and RWMC personnel found no contamination and further, no waste packages were found to be contaminated or leaking during the off loading surveys performed at NNSS. The source of contamination was never definitely attributed to PORTS uranium; however, related Corrective Action Requests delayed uranium waste shipments until problem resolution.

DOE sites utilize trailers routinely used by DOD and commercial nuclear power facilities for the transportation of their waste materials, and incoming inspection surveys at DOE sites may not identify residual radioactive contamination associated with these multi-use trailers.

Portsmouth

Lesson Learned

When embarking on large sustained radioactive waste shipping projects consider the utilization of new or well qualified trailers which would eliminate the potential for the occurrence of radiological survey findings related to historical trailer/container contamination.

Benefit (actual or anticipated)

The cost and schedule benefit related to the use of new or well qualified trailers and containers for critical radioactive waste shipments can offset additional costs related to their use.

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

This approach has been adopted and implemented for the PORTS D&D Project.

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Los Alamos National Laboratory

Presenter: Ed Worth

EM ARRA BEST PRACTICES and LESSONS LEARNED WORKSHOP

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Los Alamos National Laboratory

Project: MDA B (1940's vintage landfill used to store hazardous and radiological waste)

Overview of Best Practice or Opportunity

- Characterize old landfills to the maximum extent practicable before executing full excavation projects
  - Used Streamlined Approach for Environmental Restoration (SAFER)-like approach, which is good for some applications, but not all
    - If operational and process knowledge is reliable, SAFER approach to remediation viable with minimal or optimized investigation
    - Without reliable information planning the project becomes difficult
  - If more characterization had been completed for MDA B the following impacts could have been anticipated:
    - Excavation yielded almost twice the expected volume of waste (43,100 cy actual vs. 22,400 planned)
      - Depths of waste were as much as 30 feet instead of 12-18 feet
    - PE-Ci count was 115 actual vs. 12 assumed
      - 40 PE-Ci discovered in last 30 feet of excavation
    - TPC raised from $110M to $136M to accommodate project changes

Los Alamos National Laboratory

- Pre-excavation trenching to better estimate pit dimensions, contents
  - Non-homogenous waste still makes this challenging
- The older the landfill and less the investigation, the more MR and contingency
- Devote extra time calculating costs of risks and mitigation strategies up front

Benefit (actual or anticipated).

- With accurate information regarding old landfill contents and volume, projects can be more precisely planned
  - Greater characterization information can result in a more efficient facility design and waste packaging strategy
  - Costs of risks can be better calculated
  - TPC can be estimated more accurately

Can this practice be implemented on your base EM scope without HQ action or support? Yes

Los Alamos National Laboratory

Project: MDA B (1940's vintage landfill used to store hazardous and radiological waste) Note: Landfill located directly across street from local businesses/ nearby residences

Overview of Best Practice or Opportunity

- Efforts to conduct proactive/effective communication to public and stakeholders pay huge dividends
  - Initially held project kickoff open house in excavation enclosure, so public could appreciate work environment
  - Regulators invited to make site visits
  - Public affairs staff routinely went door-to-door to businesses across the street from excavation and nearby residences to let them know what was happening
  - Frequent and effective use of public meetings, press releases, and Citizen's Advisory Board
  - Site tours (all of TA-21) frequently conducted for CAB members, state and Federal government officials, and others

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Benefit (actual or anticipated)

- Complex projects become much less mysterious with effective communication
- When unexpected issues arise with the project, stakeholders and public are informed real time

Can this practice be implemented on your base EM scope without HQ action or support? Yes

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Project: MDA B (1940's vintage landfill used to store hazardous and radiological waste) and D&D of 26 Manhattan Project era Plutonium Processing Facilities

Overview of Best Practice or Opportunity

- Safety ingrained in all aspects of projects (ISM)
  - Safety topic briefed at the start of all meetings whether in the field or senior management
  - Hazards and safety plans reviewed before the use of equipment or before entering hazardous environment
  - Used disciplined approach to energy isolation
  - Used progressive approach to characterization of buildings to be D&D'd while proceeding through each phase
  - Embraced concept of Voluntary Protection Program
    - All workers have ability to stop work if an unsafe practice is identified

Benefit (actual or anticipated)

- Attention to safety is required in all we do; take it seriously and it will help with project success
- 646 days with only three injuries or reportable incidents
- Stakeholder confidence that project can be completed without mishap

Los Alamos National Laboratory

Can this practice be implemented on your base EM scope without HQ action or support? Yes

Los Alamos National Laboratory

Project: D&D of 26 Manhattan Project era Plutonium Processing Facilities

Overview of Best Practice or Opportunity

- Promote use of higher capacity equipment and advanced technologies in future D&D projects to enhance safety and reduce environmental impacts. Recognize that such investments may increase operating costs, and avoid disincentives to subcontractors competitively bidding on such work.
  - Hose application of dust suppressants, while reasonably effective, places operators closer to demolition activities and frequently challenges SWPPP features controlling runoff from the site. Advanced mister technologies perform better.
  - Investment in more expensive high-reach/capacity demolition equipment allowed safer operator distances from falling structures, lowered personnel contamination risks, etc.
- Remotely-controlled high capacity fog cannons are extremely effective dust suppression tools
- Much more effective at containing demolition dust than manual application using a fire hose with fog nozzle
  - Greater reach attained into demolition zone

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<u>Benefit</u> (actual or anticipated).

- Greater operator distance from demolition hazards, less likelihood of personnel contamination in debris zone
- More effective application in changing (wind) environment through remote control of fogger pan/tilt orientation
- Cannon is also able to apply fixative on debris piles and partially-demolished structures, minimizing airborne radioactivity releases between demolition actions

- With multi-story radioactive contaminated structures, investment in higher capacity/longer reach excavation equipment greatly lowers risk of incidents and injuries during demolition
  - Smaller excavators, while physically able to pull down large structures, have potential to draw operator and equipment into debris falling zone
  - Larger machines, with specialty attachments for longer reach and grappling capability, have commensurately higher rental costs
  - Higher rental costs may dissuade bidders from offering the best tool for the job – bid evaluation criteria should recognize and reward advanced capabilities on high hazard contaminated D&D efforts.

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Can this practice be implemented on your base EM scope without HQ action or support? Yes

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Hanford – Office of River Protection

Presenter: Tom Fletcher

EM ARRA BEST PRACTICES and LESSONS LEARNED WORKSHOP

Waste Management Symposium
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March 1, 2012

Project: SY Farm Transfer Line Upgrade Project

Overview of Best Practice or Opportunity

Project was planned and executed between 2009 and 2011 as an RA-funded Capital Asset Project. The SY Farm Transfer Line Upgrade Project overcame significant challenges which included updating the design to support requirement changes, fabrication of safety-significant pipe, and excavations that required workarounds to avoid below-grade interferences. The project team resolved issues through direct oversight and personnel involvement with subcontractors as required in order to ensure contract requirements were met, completing ahead of schedule and under budget

Benefit (actual or anticipated)

The Project replaced eight non-RCRA compliant transfer lines in the 241-SY tank farm per Key Performance Parameters. The Project budget levels for the Capital Asset Project were $4.3M in FY10 and $11.7M in FY11 ($16M overall). Removed and installed 770 linear feet of 3-inch stainless steel pipe with 6-inch encasement pipe, and 780 cubic yards soil were excavated. Installed 24 pit nozzles into 5 containment pits and welded the nozzles to the transfer and drain leg piping.

Office of River Protection

Weekly project management meetings from start to project finish worked well. When issues were identified, daily focus meetings were used to manage specific issues as non-conformance reports, technical evaluations, and engineering change notices. Management facilitated inter-departmental and contractual teaming to coordinate issue closure.

The project experienced inadequate tracking of requirements. Requirement flow-down and expectations to subcontractor, and lower-tier sources were not clearly understood and compliance to NQA-1 and specification requirements was insufficient. The project team developed a recovery plan which formalized and provided a structured approach to track the requirements as the subcontractors completed the field work and inspections. The requirement tracking was provided to all stakeholders; ORP, OECM, the Tank Farm contractor and their subs. The contract statements of work for design, fabrication, and construction needed to define deliverables with objective evidence for requirement compliance. The project team and their oversight counterparts increased the rigor in the submittal process to include review of fabrication and construction travelers and work packages documentation and through formal acceptance plans.

Office of River Protection

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

The Tank Farm Contractor has initiated various process and procedure changes based on the lessons learned from the SY project. Potential procedural changes are being evaluated and pilot cases are in progress for engineering, procurement, and work control to better support engineering, procure, and construct type projects.

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Hanford -- Richland

Presenter: Jerry Long

EM ARRA BEST PRACTICES and LESSONS LEARNED WORKSHOP

Waste Management Symposium
Phoenix, AZ

March 1, 2012

Hanford -- Richland

Project: Hanford/Site Cleanup Footprint Reduction

Overview of Best Practice or Opportunity

Ramp-down/Workforce Restructuring

Successful ramp-down and restructuring of the workforce required:

- Early, detailed planning and commitment to maintain safety and progress through downsizing anticipating:
  - Workers distracted with layoffs
  - Releasing ~100 people per day
  - Transitioning to a smaller organization
- Workforce Restructuring keys:
  - Early, frequent and open communication
  - National advertisement and local job fair for potential employers
  - Online job placement resources
  - Change management workshops
  - Weekly bulletins and monthly newsletter articles
  - Promoting the workforce to corporate and supply chain

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<u>Benefit</u> (actual or anticipated)

- Maximized opportunity for trained, multi-disciplined workforce
- Maximized work accomplished with ARRA funds
- Safely executed workforce restructuring including ~1,200 layoffs

<u>Can this practice be implemented on your base EM scope without HQ action or support?</u> *Yes*

Hanford -- Richland

Project: Hanford/Site Cleanup Footprint Reduction

Overview of Best Practice or Opportunity

Recruitment & Ramp-up

Meeting the ARRA challenge and opportunity required significant recruitment and ramp-up of the work force including:

- Hosting an initial, large-scale, two-day job fair for direct hires and subcontractor positions with 4,000+ applicants over two days; participating in 22 job fairs since ARRA inception
- Pooling more than 22,000 job applications and résumés
- Mobilizing for nearly 2,000 new hires, including:
  - Medical exams, body counts, background checks and badging
  - Adding ~200 mobile facilities with computers, telephones, supplies
  - Vehicles, heavy equipment, waste containers
  - Equipment, tools, Personal Protective Equipment
  - Increased sampling volume

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- Implementing an Integrated Training Program
  - Large-scale training required site-wide planning, preparation and implementation
    - Resource limitations
    - Competing contractor demands
    - Consolidated/expanded facility usage
    - Prioritization of effort
- Training Support Team provided administrative direction and control to new hires
  - Developed fundamentals course, block training and project-specific training
- Partnered new and existing workforce to share lessons learned, foster mentoring and engage new hires in safety culture

Benefit (actual or anticipated)

ARRA created and retained jobs and expanded workers' skills for future opportunities while increasing support to small businesses:

- Nearly doubled size of workforce and scope in a matter of months
- Cleanup area increased 280%
- Exceeded subcontractor goals with 51% awarded to small business

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

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Project: Hanford/Site Cleanup Footprint Reduction

Overview of Best Practice or Opportunity

Work Execution

Accelerating critical environmental cleanup with “shovel ready” projects in a narrow window of time required open, transparent communications and innovation:

- Teaming with regulatory agencies early to quickly plan, organize, and gain concurrence
- Close work between DOE/CHPRC and partnering with regulatory agencies and stakeholders to solve issues and allow project to meet deadlines with success
- Managing contracts knowing change orders are inevitable
- Clearly defining safety/quality standards and expectations for offsite contractors by contract
- Robust, detailed reporting for increased political and media attention
  - Established information flow
  - Weekly compilation of accomplishments, photo, video
  - Being prepared to document major events
- Multiple reporting mechanisms with consistent tracking of costs and metrics
  - COBRA Cost - Tracking and Reporting
  - Primavera (P6) - Scheduling and Status
  - Business Management Systems for Procurement, Timekeeping, Financial, etc.

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- Work innovations and efficiencies were key:
  - Super dump trucks provided increased capacity for transporting soil for disposal
  - Mobile survey technology reduced environmental impacts, costs and schedule
  - Water treatment optimization techniques increased capability by 300 million gallons per year without adding new facilities
  - Treatment resin at pump and treats reducing long-term operating costs by $20 million (approx. equal to cost of construction)
  - Installed wells to inject Apatite (calcium-citrate and phosphate) to expand a groundwater barrier in soil
  - Deployed standard large box 2 (SLB2) TRU waste containers to more safely and efficiently transfer gloveboxes for disposal at WIPP
  - Point of Waste Generation Strategy reduced waste handling and improve worker safety

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Benefit (actual or anticipated)

- Safely completed $1.3 billion Recovery Act scope
- Doubled workforce and scope in first contract year
- Met or exceeded all but one ARRA goals

Can this practice be implemented on your base EM scope without HQ action or support? Yes

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Nevada Nuclear Security Site

Presenter: Rich Schassburger

EM ARRA BEST PRACTICES and LESSONS LEARNED WORKSHOP

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Nevada Nuclear Security Site

Project: Soil and Water

Overview of Best Practice or Opportunity

Work Execution ✓

Significant inspection and certification criteria are required to transport and dispose radioactive waste. Close coordination between the D&D project and disposal site improved work practices, resulted in significant efficiencies, and reduced the schedule by several weeks. Highlights include:

- Composite building debris profile allowed shipping paperwork to be generated by the net weight of the debris and the radiological calculations to be based on pre-demolition radiological surveys.
- Created a special staging area where full intermodals were dropped off and empty ones retrieved to return to the job site. Transported full intermodals from the staging area to the waste cell and back to the staging area, allowing the haul trucks to return to the job site.
- Calibrated scales on the fork lift at the job site allowed the intermodals to be weighed as they were filled. This eliminated rework for overweight intermodals.
- Installed microwave tower and transmitter to transmit shipping paperwork real time to all parties. Outlying areas do not have consistent internet services and transfer of paperwork is essential.

Nevada Nuclear Security Site

- Switched to tandem haul trucks versus flatbeds, allowing transfer of two intermodals with each trip versus one on the flatbeds. This reduced the amount of time that heavy trucks were traveling.
- Exemption to site transportation limits to allow tandem trucks to carry intermodals loaded to same weight as a flatbed. This will allow increased net shipping weight per intermodal. In addition to hauling more waste per trip, this could also reduced the number of liner bags and shortened the shipping schedule.
- Request deviation to Waste Acceptance Criteria (WAC) to allow:
  - metal placed in intermodals to be cut to 6 foot long pieces versus the 3 foot long pieces in all directions.
  - unpackaged bulk waste shipped as SCO-1 material by spraying rebar and scrap metal with a fixative containing a blue dye to verify coverage, surveyed for radiological contamination, and then loaded into end dumps for transport.
- Project decision upfront to purchase top loaded heavy duty intermodals to transport the debris.

Benefit (actual or anticipated)

- Cost savings

Nevada Nuclear Security Site

Can this practice be implemented on your base EM scope without HQ action or support? Yes

Nevada Nuclear Security Site

Project: Soil and Water

Overview of Best Practice or Opportunity

Work Execution ✓

Project personnel developed a plan for facility demolition based on the initial Asbestos Characterization Report. During strip-out and decontamination activities in preparation for demolition, the project team determined that additional characterization was required to sufficiently identify the extent of asbestos to perform demolition activities and determine the appropriate waste disposition pathways. The project paused operations, evaluated the potential for worker exposure to asbestos, and determined that no workers were exposed above permissible limits. An Asbestos Hazard Emergency Response Act (AHERA) assessment characterization effort and report were then developed to guide further activities, including asbestos abatement prior to demolition. Analysis concluded that asbestos characterization performed to support regulatory closure is sufficient to place facilities into stable condition with minimal potential to impact the environment or workers. However, additional asbestos characterization is required to ensure that the appropriate controls are utilized for demolition and to identify the appropriate waste disposal pathways. Prior to demolition activities at closed facilities, previous characterization data must be reviewed and a characterization gap analysis performed to define additional characterization efforts required for all remaining suspect hazards that may be present and to determine appropriate waste disposition pathways.

Nevada Nuclear Security Site

<u>Benefit</u> (actual or anticipated)
Cost savings and prevention of asbestos exposure.

Can this practice be implemented on your base scope without HQ action or support? *Yes*

Nevada Nuclear Security Site

Project: Soil and Water

Overview of Best Practice or Opportunity

Work Execution ✓

Move the crew to night shift to avoid the sun and the heat.

Removal of the radioactively contaminated piping presented a number of obstacles including how to cut highly contaminated piping and maintain contamination control. It was decided to line the entire pipe alley and areas of tank connections with plastic and control those areas as a High Contamination Area (HCA). The challenge that this brought was the associated PPE required to be worn by the workers in the HCA in the summer months. Preplanning anticipated the heat stress issue and a cool down area was created. The cool down area was capable of dropping the ambient temperature by 20 degrees and provided a shaded area where workers could rest and cool down without fully doffing their anti-Cs. Still, due to the extreme desert heat, work rest cycles were often 30 minutes on and 30 minutes off. This work/rest cycle, when combined with the time it takes to don and doff anti –Cs, greatly impacted production. Productivity was ultimately enhanced by moving the crew to night shift to avoid the sun and the heat. his allowed the team to complete a large amount of work in two weeks.

Nevada Nuclear Security Site

Benefit (actual or anticipated).
Moving the crew to night shift to avoid the sun and the heat significantly increased productivity and reduced project schedule.

Can this practice be implemented on your base EM scope without HQ action or support? Yes

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Carlsbad – Waste Isolation Pilot Plant

Presenter: Rich Schassburger

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Carlsbad – Waste Isolation Pilot Plant

Site/Project: Definition of "Project Complete"

Overview of Best Practice or Opportunity

Project Planning ✓

The definition of "Project Complete" was not clearly defined for all projects. Completion declaration was delayed to accommodate administrative close out, thus resulting in a negative schedule variance. "Project Completion" can be considered to be accomplished at a different stage for each individual project. For example, project completion can be accomplished when the physical scope of work was completed (i.e., the construction completed). However, the project was not declared complete until administrative paperwork was completed and the file closed. The definition of "complete" should be clearly defined in the project execution plan or other governing document at the outset of the project to avoid unnecessary and artificial negative schedule variances.

Benefit (actual or anticipated)

The "project complete" achievement should be clearly defined in a project's Statement of Work or Project Execution Plan. Negative schedule variances and project milestone completion can be avoided.

Carlsbad – Waste Isolation Pilot Plant

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

The "project complete" best practice can be implemented on WIPP base EM scope with no HQ action or support necessary.

Carlsbad – Waste Isolation Pilot Plant

Project: Jobs Created or Saved – Tracking and Trending

Overview of Best Practices or Opportunity

Work Execution ✓

At the outset of the ARRA project, a goal of jobs to be created or saved based on the scope of work was established. The scope was subdivided into projects; each of which had a scope and schedule. The scope and schedule drove estimates of total jobs to be created or saved over the life of the projects. The projects jobs were then summed and time phased for tracking over the life of the ARRA work. Rather than estimate actual jobs created or saved using mathematical algorithms based on expenditures, contractual requirements (established during the procurement process) for subcontractors to provide monthly reports of actual jobs created or saved with hours worked by each employee were established. Actual employee names were also required. Therefore, each month subcontractors would report named employees who had provided ARRA work and the number of hours for each. This eliminated "guesstimates" that could not be verified. Prime contractors provided similar reports based on their labor reporting systems. Again, hours for each named employee were recorded and tracked.

Carlsbad – Waste Isolation Pilot Plant

Benefit (actual or anticipated)

Use of this system, eliminated guesswork relative to jobs created or saved. It also allowed DOE to recognize when contractor employees ceased working on an ARRA project. This system also provided objective evidence of jobs created or saved during ARRA audits.

Can this practice be implemented on your base EM scope without HQ action or support?

Yes, this process can be implemented for base scope with HQ action or support.

Carlsbad – Waste Isolation Pilot Plant

Project: Management Reserve

Overview of Best Practice or Opportunity

Project Planning ✓

The ARRA Project assigned all funding to defined projects at the beginning of the Recovery Act. No funds were assigned to Management Reserve. As emerging issues were identified during project execution, no funds had been kept in reserve to fund these issues. The situation required that aggressive pursuit of underruns or scope changes in existing projects to fund emerging issues. This contributed to conflict among project managers that had to be resolved within the greater ARRA project.

Benefit (actual or anticipated)

Reduced level of conflict in order to fund emerging issues could have been avoided if a portion of the funds had been assigned to Management Reserve at the beginning of the ARRA project to allow funding of emerging issues.

Carlsbad – Waste Isolation Pilot Plant

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

The assignment of management reserve best practice can be implemented on WIPP base EM scope with no HQ action or support necessary.

Carlsbad – Waste Isolation Pilot Plant

Project: Performance Based Incentives (PBIs)

Overview of Best Practice or Opportunity

Project Planning ✓

Performance Based Incentives (PBIs) need to be evaluated and revised during initial contract negotiations. These should be considered and revised (when appropriate) in light of essential performance goals across the complex, with consideration to identify and eliminate conflicting priorities (e.g., footprint reduction) at each site. PBIs must reflect DOE EM over all goals and metrics. In addition, "super stretch" goals should not be used as PBIs. Ensure that target PBIs are determined collectively when considering multiple sites and multiple contract incentives.

Benefit (actual or anticipated)

Alignment of generator sites and WIPP priorities and PBIs would ensure that common TRU waste cleanup goals are achieved as effectively as possible. Target PBIs should be collectively determined when considering multiple sites and multiple contract incentives. Alignment of target PBIs was not completed before the waste acceleration program was initiated. PBIs need to be evaluated and revised during initial contract negotiations.

Carlsbad – Waste Isolation Pilot Plant

<u>Can this practice be implemented on your base EM scope without HQ action or support?</u> *No*

The PBI best practice cannot be implemented on WIPP base EM scope that involves participation of the generator sites without HQ action or support.

Carlsbad – Waste Isolation Pilot Plant

Project: Establish an Unfunded Priority List

Overview of Best Practice or Opportunity

Identify activities that could be funded using ARRA funds as a result of cost savings under the existing scope. Therefore, in conjunction with prime contractors, DOE CBFO established a ranked unfunded priority list of activities that would be funded through ARRA if/when funding became available. Rankings were based on need, estimated cost and ability to complete within the ARRA performance period (i.e., lead times).

Benefit (actual or anticipated)

This allowed identification and implementation of activities in a logical and coherent fashion that would be of greatest benefit as cost savings were realized. It also provided advanced planning for the expenditure of ARRA funds in a timely manner.

Can this practice be implemented on your base EM scope without HQ action or support?

Yes this practice can be implemented on base EM scope without HQ action or support. In fact, this practice has been implemented at WIPP for Base activities

Carlsbad – Waste Isolation Pilot Plant

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Moab

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Moab

Overview of Best Practice and Opportunity

Work Execution ✓

Provide adequate training to new employees and have processes and procedures in place when ramping-up quickly. New employees may not fully understand the processes, procedures, and field conditions when starting work with heavy equipment and other machinery. This has resulted in several minor safety incidents.

Benefit (actual or anticipated)

Reduce the number of safety accidents.

Can this practice be implemented on your base EM scope without HQ action or support? Yes/No.

Yes

Site Contact(s)

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Moab

Overview of Best Practice and Opportunity

Project Planning

Work Execution ✓

During the ramp-up and in response to the incidents, the contractors appointed shift safety leads, sought continuous worker feedback, re-examined work processes, and established a safety incentive program.

Benefit (actual or anticipated)

Continuous improvement of operations.

Can this practice be implemented on your base EM scope without HQ action or support? Yes/No.

Yes

Site Contact(s)

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U.S. DEPARTMENT OF ENERGY

Lessons Learned

Argonne National Laboratory

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Argonne National Laboratory

Project: EM/SC agreement regarding EM ARRA workscopes at SC sites

Overview of Best Practice or Opportunity

Work Execution

The Recovery Act provided a great opportunity for SC sites to execute emerging scope that EM had found acceptable subject to availability of funding. EM and SC, in an August 2009 agreement that included the following: “work will be executed utilizing SC Laboratory M&O Contractor work processes, project baselines, contract requirements, safety management systems, and DOE SC authorization bases and oversight processes”.

Benefit (actual or anticipated)

Use of the well-defined SC processes and systems that already were in place, saved months of schedule for projects, with no observed detriment to either safety or project performance. This approach also minimized the need for additional FTEs to do additional planning, oversee work and report on progress.

Argonne National Laboratory

Can this practice be implemented on your base EM scope without HQ action or support? *Yes*

This approach should be considered, and tailored as appropriate, for any future emerging scope at SC sites, which would require HQ support.

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